chemical reactions, comprising:

providing, on a heat sink, a printed circuit board on which is an array of blocks, said blocks having high thermal conductivity;

providing an array of reaction chambers in a chip formed of material having low thermal conductivity, said chip being disposable and selected from the group consisting of plastics, polymers, elastomers, glass, silica, and ceramics;

filling each reaction chamber with reagents necessary for said chemical reaction and then pressing the chip against the blocks in a manner such that at least one reaction chamber symmetrically overlies a single block; and

independently heating each block that is overlaid by a filled reaction chamber whereby the reagents in each chamber are maintained at a constant and uniform temperature for a time period, said temperature and time period being independently adjustable for each chamber.

REMARKS

Examiner Siew is thanked for his thorough search and Office Action. Reconsideration of the rejection of all claims is respectfully requested. We wish to comment on his remarks as follows:

Reconsideration is requested of all rejections based on unclear terms in the specification:

The drawing references relating to the various thermal paths present in the structure have now been clarified through a complete rewriting of the last paragraph on P. 10. Examiner is thanked for bringing this matter to our attention.

. Vias are conductive connections that run between two or more conductors that are at different levels in a chip. It is a term of art in widespread use in the microelectronics industry.

Reconsideration is requested of all rejections based on objections to the claims:

Claim 2 has been rewritten and is now in proper Markush format.

Reconsideration is requested of all rejections based on 35 USC 103:

Examiner's comment that there is no prior art that teach or suggest the claimed device with soft layer softer than 100 and hard than 1 on Shore D Durometer is noted and, accordingly, the relevant phrase in claim 4 has been transferred into claim 1. Claim 4 has

not been canceled since part of it still remains dependent on claim 1 as now amended.

Examiner's comment that claims 21, 22, 23, and 26 are free of the prior art is noted. Claim 26 has been absorbed within claim 19 causing the latter to now become allowable.

In conclusion, we again thank Examiner Siew for his careful reading of our application.

Reconsideration and withdrawal of the rejection is respectfully requested.

Allowance of all Claims is requested. It is also requested that should Examiner Siew not find that the Claims are now Allowable, he should please call the undersigned Attorney at (845)-452-5863 to overcome any problems preventing Allowance.

Respectfully submitted

Stephen B. Ackerman #37761

IME01-001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

Please amend the last paragraph on P. 10, as follows:

As seen in FIG. 3, arrow 33 (henceforth to be referred to as R_Sub_Z) [33, R_Chip_Z 31, R_Sub_X 34, and R_Chip_X 32] represents the thermal resistance[s] of the thermal path[s] between [the] balancing block 1 and the heat sink 3. Similarly, arrow 31 (R_Chip_Z) points to the thermal path [,] between [the] balancing block 1 and the chamber 6, arrow 34 (R_Sub_X) [between each pair of adjacent blocks t through the substrate 2 and through the chip 5, respectively] points to the thermal path between each pair of adjacent blocks 1 through the substrate 2, and arrow 32 (R_Chip_X) points to the thermal path between adjacent blocks 1 through chip 5. To obtain excellent thermal isolation between chambers 6, R_Sub_X and R_Chip_X should be much larger than R_Sub_Z. An approximate relation can be stated as follows:

In the claims:

Please cancel claim 26.

Please amend the following claims:

1. An apparatus for simultaneously performing multiple, independently controlled, chemical reactions, comprising:

a printed circuit board mounted on a heat sink;

on said printed circuit board, a first array of one or more blocks, said blocks having high thermal conductivity;

on said array of blocks, a chip formed of material that has low thermal conductivity;

a plurality of reaction chambers in said chip, whereby at least one reaction chamber symmetrically overlies a single block of the first array and thermal conductance between each reaction chamber and the block that it overlies is much greater than thermal conductance between any two reaction chambers;

a heating source and a temperature sensor between the chip and each high thermal conductivity block;

between each of said blocks and said chip, a layer that is softer than 100 and harder than 1, when measured on a Shore D Durometer; and

electrical leads from each heat source and each temperature sensor whereby each heating source can be independently controlled.

2. The apparatus described in claim 1 wherein said chemical reactions are selected from the group consisting of temperature dependent chemical reactions [whose rate is temperature dependent, including] and polymerase chain reactions.

4. The apparatus described in claim 1 wherein [the soft layer is softer than 100 and harder than 1, when measured on a Shore D Durometer, and wherein] said high thermal conductivity blocks have a thermal conductivity that is between about 2 and 500 W/m.K.

19. A process for simultaneously performing multiple, independently controlled, chemical reactions, comprising:

providing, on a heat sink, a printed circuit board on which is an array of blocks, said blocks having high thermal conductivity;

providing an array of reaction chambers in a chip formed of material having low thermal conductivity, said chip being disposable and selected from the group consisting of plastics, polymers, elastomers, glass, silica, and ceramics;

filling each reaction chamber with reagents necessary for said chemical reaction and then pressing the chip against the blocks in a manner such that at least one reaction chamber symmetrically overlies a single block; and

independently heating each block that is overlaid by a filled reaction chamber whereby the reagents in each chamber are maintained at a constant and uniform temperature for a time period, said temperature and time period being independently adjustable for each chamber.